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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,240	11/18/2003	Mike MacArthur	ROB3108.03A	6893

7590

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EXAMINER

ADDISU, SARA

ART UNIT

PAPER NUMBER

3722

DATE MAILED: 01/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/717,240	MACARTHUR, MIKE	
	Examiner	Art Unit	
	Sara Addisu	3722	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/18/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 14 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 14, lines 2-3, recites the limitation "off-set from any other pair of flutes by between about 1degree to about 10 degree". There is insufficient antecedent basis for this limitation in the claim. Applicant has not indicated which plane the angle is being measured from. Furthermore, review of the Drawings and Specification does not clarify how the Applicant is measuring the off-set of the paired flutes.

Appropriate correction is required. New matter is not permitted.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4 and 9, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Hiyama (U.S. Patent No. 4,963,059).

Hiyama teaches a rotary cutting tool (drill) having a shank portion (10b) that extends to a cutting part (region) (10) which terminates in a cutting tip, and a plurality of paired flutes (12a, 12b, 12c and 12d) formed within the cutting region beginning at the cutting tip and terminating at a distal location towards the shank. Hiyama also teaches cutting edges (16a, 16b, 16c and 16d) formed along an outer border of each flute and each flute has a first helical-pitch (proximate the cutting tip) gradually transitioning to a second helical-pitch (proximate the terminating distal location) (See figure 1 & 2: for paired flutes).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 6-8 and 11-13, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiyama (U.S. Patent No. 4,963,059), in view of Lindblom (U.S. Patent No. 5,312,209).

Hiyama teaches a rotary cutting tool as set forth in the above rejection. Furthermore, Hiyama teaches angles  $\theta_1$  and  $\theta_2$  that have diametrically opposite relation and helix angle ( $\theta_2$ , i.e. second helical-pitch) that is greater than helix angle ( $\theta_1$ , i.e. first

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helical-pitch) therefore the two helical pitches do not equal each other (See figure 3 and Col. 3, lines 6-11). Additionally, Hiyama teaches each adjacent flute having helical pitches ( $\theta_1$  and  $\theta_2$ ) that are reversed (see figure 3).

However, Hiyama is silent about the first helical pitch being 30 degrees to about 40 degrees (and accordingly, second helical pitch being 40 degrees to about 30 degrees).

Lindblom teaches drill (rotary tool) having flutes (7 & 7') that extend helically around the longitudinal axis of the shank (see figure 1). Lindblom also teaches flutes having pitch angle within the range of 20 degrees to about 40 degrees (i.e. first helical-pitch and since helical and consequently second helical pitch would be 40 degrees to about 20 degrees). This range meets the limitation 30 degrees to about 40 degrees (and 40-30 degrees) claimed in claims 3, 6-8 and 11-13.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to make the flutes of Hiyama rotary tool to have a first helical-pitch of 20 degrees to about 40 degrees (and accordingly, second helical pitches 40-20 degrees) as taught by Lindblom for the purpose of improving the chip-conveying ability of the rotary tool by simple means and by minimal economic contribution ('209, Col. 3, lines 6-12).

Claims 2, 5 and 10, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiyama (U.S. Patent No. 4,963,059), in view of Maier (U.S. Patent No. 4,594,034), and further in view of De Dobbelaere et al. (U.S. Patent No. 3,217,382).

Hiyama teaches a rotary cutting tool having flutes with non-equal pitch angles  $\theta_1$  and  $\theta_2$  as set forth in the above rejection.

However, Hiyama is silent about the first helical pitch being 10 degrees to about 60 degrees (and accordingly, second helical pitch being 60 degrees to about 10 degrees).

Maier teaches a drill bit having a shank (3) and plurality of helicoidal grooves or flutes (4), which are bounded by respective lips (5-7) terminating in lateral cutting edges (8) (see figure 1 & Col. 3, lines 10-20). Maier also teaches flutes having a pitch angle that ranges between zero degrees and 45 degrees.

De Dobbelaere et al. teaches a rotary tool having shank (10) and plurality of peripheral flutes (14) forming cutting edges (16) (see figure 1). De Dobbelaere et al. also teaches flutes that are generally helical that form helix angle (i.e. helical pitch) between the leading edge of the lands and the axis of the rotary tool (Col. 2, lines 42-50). Furthermore, De Dobbelaere et al. teaches pitch (helix angle) of 45-65 degrees (col. 3, lines 26-30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Maier and De Dobbelaere et al. to Hiyama rotary tool such that the first helical-pitch of 0 degrees to about 65 degrees (and accordingly, second helical pitches 65-0 degrees) will be achieved for the purpose of avoiding continuously reshaping the rotary cutting surfaces and ultimately reducing cost and increasing the efficiency of the rotary tool ('382, Col. 1, lines 60-64).

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[Note: this range meets the limitation 10 degrees to about 60 degrees (and 60-10 degrees) claimed in claims 2, 5 and 10].

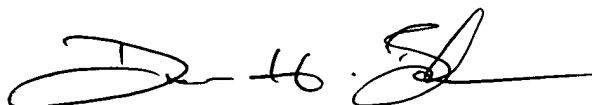
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sara Addisu at (571) 272-6082. The examiner can normally be reached on 8:30 am - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington can be reached on (571) 272-4483. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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